## CIRM Stem Cell Biotechnology Training Program

## Grant Award Details

CIRM Stem Cell Biotechnology Training Program

**Grant Type:** Bridges II

**Grant Number:** EDUC2-08383

**Project Objective:** This program trains diverse students to enter the stem cell research workforce and accelerate the development of stem-cell based therapies to treat or cure patients. The program recruits undergraduate and post-baccalaureate level students to a 2-year program, culminating in a Biotechnology Certificate. The curriculum includes stem cell coursework, patient engagement, outreach activities, and a 12 month laboratory internship at a world-class research institute.

**Investigator:**

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| **Name:** | Lisa Klig |
| **Institution:** | Cal State Univ, Long Beach |
| **Type:** | PI |

**Award Value:** $3,009,102

**Status:** Active

## Grant Application Details

**Application Title:** CIRM Stem Cell Biotechnology Training Program

**Public Abstract:**

The goal of the proposed program is to train exceptional and diverse advanced undergraduate, post-baccalaureate, and masters students in the theory and techniques of stem cell research for the development of therapies. These students will be prepared to enter the California workforce with long-term career opportunities as stem cell researchers. They will be recruited from the ~2,000 students in the Departments of Chemistry and Biological Sciences, and qualified post-baccalaureate students from other institutions, at a large (~37,000 students) comprehensive urban university. It is a predominantly undergraduate institution with a large minority population, which has been designated a Hispanic Serving, and an Asian American, Native American, Pacific Islander Serving Institution. The students enroll in the two-year stem cell track of the post-baccalaureate Biotechnology Certificate Program, which was established with funding from Bridges 1.0 (2009-2016). The first year, which consists of courses and research experience, occurs at this university. During the second year, ten interns will perform full-time research in one of more than thirty stem cell laboratories at Cedars-Sinai, City of Hope, and UC Irvine.

To accelerate the development of therapies, the stem cell track will be enhanced to include several new components. Required coursework will be expanded to include an exploration of the drug development process and regulatory pathway. To understand the importance and urgency of accelerating the development of stem cell therapies to treat patients with unmet medical needs, students will engage in activities that engender in them an appreciation of the patients' perspectives and experiences. Some of these activities include interacting with patients at Children's Hospital Orange County and attending a workshop with a spinal cord injury patient and advocate from the VA Long Beach Healthcare System. The stem cell interns will also participate in three different types of community outreach and education activities. The interns will use social media to reach many groups of Californians by contributing to a YouTube channel and a Facebook page. The interns will educate a diverse academic population by presenting at a symposium. Finally, the interns will have direct contact with community leaders and the general public by participating in panel presentations for a leadership program and a local community college. These activities could initiate a life-long appreciation of regenerative medicine stem cell technologies. This will have a significant impact on our society given the role of the voting population in the funding and promoting of advanced technologies.

Extensive mentoring, advising, and workshops throughout and after the program will ensure successful academic and career placement for current participants and alumni. This program has a history of successfully training students for graduate study and for the California workforce.

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| **Statement of Benefit to California:** | The goal of the proposed program is to train students, representing the diversity of California, to enter the stem cell research workforce and accelerate the development of stem-cell based therapies to treat or cure patients. Both the State of California and its citizens will greatly benefit from this program. At this large, urban, State University, nearly all of the students are California citizens (more than 95%). These students reflect the ethnic mosaic of the local communities and will enrich the scientific enterprise with their unique perspectives. They will also educate their communities by sharing the knowledge and experience they gain in this training program.<br><br>The California workforce will benefit from these diverse students being prepared to pursue careers in stem cell research, therapy, and regenerative medicine. During the two-year stem cell track of the post-baccalaureate Biotechnology Certificate Program, students receive specialized training and complete coursework including biotechnology, drug development and the regulatory pathway, and bioethics. Ten interns per year will then perform one-year full-time research internships in stem cell laboratories at Cedars-Sinai, City of Hope, and UC Irvine. They will also participate in patient engagement activities to increase their awareness of the challenges patients face in daily life. This should motivate them to accelerate the development of stem cell-based therapies. The interns will engage in community outreach activities, with leadership groups and community colleges, to inform the public about the medical and biological advances of stem cell research. These activities may have a significant impact on the State of California given the role of the voting population in the funding and promotion of advanced technologies.<br><br>Students receive extensive mentoring throughout the program, including workshops in writing and submitting applications, in interviewing skills, and in scientific career advancement. These skills are critical for our students, many of whom are first in their families to attend University or first generation U.S. citizens. Alumni of the program will continue to receive support as they advance their careers in stem cell research and regenerative medicine in the State of California.<br><br>The State of California benefits by having a diverse and highly skilled workforce. This will facilitate the establishment of stem cell companies that translate this technology into the regenerative medicine marketplace and contribute to the tax base. This will also lead to the development of novel therapies to meet patient needs. Ultimately, recruiting and retaining new scientists in the California workforce will help foster the growth of the high-tech biomedical sector of the California economy.<br><br>This University has a long history of successfully training large numbers of diverse students for graduate study and for the California workforce. |